

# Pre-filled syringe systems – a success story

The pharmaceutical and biotech industry has registered a growing demand in the market segment of pre-filled syringe systems during the past ten years. Health-care experts consider these systems to be the state of the art for the parenteral administration of drugs. According to a study conducted by BD, nine out of ten persons surveyed prefer pre-filled application systems to conventional syringes: the decisive factors included their user-friendliness, patient safety and efficient use. The transfer into a pre-filled syringe or cartridge system is possible during all life cycles of a product.

## ***The Beginnings of Pre-filled Syringe Systems***

Pre-filled syringe systems were first used in Europe in the 1980s. Applications were limited to a few vaccines and blood anti-coagulants. With the development of the first biotechnologically manufactured drugs and the growing variety of applications, pre-filled syringe systems were introduced for the first time in the United States. Many of the expensive, highly sensitive biologicals can only be administered in parenteral form pre-filled application systems assure dosage accuracy during injection.

Single-Chamber Syringe with Rigid Needle Shield (RNS)

## ***Europe as the Main Sales Market***

The global market share of pre-filled syringe systems has grown to almost 1 billion units, with the European market dominating. The U.S. and Japanese markets are quickly catching up: Japan's market share in pre-filled syringe systems grew by more than 20% in 2004 (source: IMS Health).

## ***Innovations***

The growing market demand has spurred efforts to optimize the injectable dosage form. In recent years, various technical innovations were realized and new methods developed, making the use of pre-filled syringe and cartridge systems much more convenient and attractive, for example during the product life-cycle management of pharmaceuticals.

## **Needle Protection**

This category comprises the development of safety devices providing needle protection during and after the injection. They include component combinations placed over the needle (needle shield) and systems into which the syringe can be inserted.

Automated assembly of safety-devices

## Anti-Counterfeiting Measures

Other current developments in the area of patient and product safety are originality seals and anti-counterfeiting solutions. Originality seals assure the originality of a product from its manufacture to its use on the patient. Identification systems allow for continuous tracking of every product throughout the production process.

## Modern Application Aids

Modern application aids, such as autoinjectors or pens, can also be designed for syringes. These injection devices offer easy handling and precise dosing, thereby affording the regular user greater independence and a better quality of life.

## Innovations in Production

Another innovation of recent years is baked silicone: Many biotechnologically manufactured formulations have a tendency to react with the oily form of silicone, an indispensable gliding agent in many syringe types. By using baked silicone, the amount of free silicone in application systems can be markedly reduced. During the process, while exposed to hot air, the silicone binds to the glass barrel of the syringe, preventing the injection of silicone along with the drug when the syringe content is expelled. Baked silicone has thus made an important contribution to the optimization of treatment methods and increased patient safety worldwide.

